A STUDY OF THE PHYSICAL CHARACTERISTICS OF THE CONGAREE RIVER AT COLUMBIA, SOUTH CAROLINA

BY
CARL D. SIMPSON
LICENSED BY THE UNITED STATES COAST GUARD
TO OPERATE OR NAVIGATE PASSENGER CARRYING
VESSELS ON THE CONGAREE RIVER

This study was compiled from information gathered from the following sources

The Central Midlands Regional Planning Council
John David Spade, Information Office, City of Columbia
Office of the City Engineer of Columbia, S. C.
State Newspaper and Columbia Record Newspaper, Columbia, S. C.
South Carolina Water Resources Commission
South Carolina Department of Health and Environmental Control
South Carolina Public Service Authority
South Carolina State Highway Department
Corps of Engineers, United States Army
United States Geological Survey
Soil Conservation Service, United States Department of Agriculture
National Oceanic and Atmospheric Administration
The Federal Power Commission in Washington, D. C.

My special thanks to the following
Mr. Robert Gossler, Central Midlands
Mr. Jeffcoat, United States Geological Survey
Mr. Baskin, National Oceanic and Atmospheric Administration
Mrs. Rawlinson, Richland County Treasurer's Office
Mr. Coleman, Water Resources Commission
Mr. George Heuer, Soil Conservation Service, River Basin - Watershed Planning Staff

Cover Photo of Congaree River at Columbia
And Graphics
By
Keith E. Nunnery
Dreher High School Graphics Class
Tim Kaspryzk, Instructor

West
Columbia
COLUMBIA
Cayce
MATCH LINE
PLATE 3
SUNSET BLVD.
MEETING
AUGUSTA
ABBOTT
KNOX
LAFAYETTE
POPULAR
SOUTHERN
RAILWAY
SEABOARD
COAST LINE R.R.
GERVAIS ST.
HUGER
GREEN
BLOSSOM
ASSEMBLY ST.
PICKENS
HARDEN
DEVINE
WOODROW
ROSEWOOD
DRIVE
GILLS CREEK
SOUTHERN RAIL YARD
BLUFF
BELT
ROAD
FRINK
COLUMBIA SPEEDWAY
NEW STATE RD.
Dike
RICHLAND
LEXINGTON
COUNTY
CONGAREE RIVER
CONGAREE CREEK
MILL CREEK
STATE ROAD
OLD
1
2
3
4
5
6
50

GENERAL RIVER INFORMATION

The Congaree River at Columbia begins at the Gervais Street bridge (Mile Post 175, starting at Charleston, S. C. and counting upstream).

It is formed by the confluence of the Broad and Saluda Rivers. The flow is regulated by Lake Murray and Lake Greenwood on the Saluda River, and to some extent (at low and medium flow) by powerplants on the Broad River. The City of Columbia diverts a small amountfor its municipal water supply.

The Congaree River, with a total contributing drainage area of 8,500 square miles, flows southeasterly 51 miles to its junction with the Wateree River and they form the Santee River.

The Congaree is the middle link in what is known as the Santee River Basin which drains most of South Carolina and a large part of western North Carolina.

Annual precipitation over the basin is 50 inches. The highest rain fall is generally in July, August, and September.

Maps going back to the earliest period of settlement in South Carolina show that the confluence of the Broad and Saluda Rivers was a major stumbling block to further river travel and trade because of rapids (or falls as they were listed then.) Columbia was located here because this was the western terminus of water travel on this river system.

Since this river is navigable to the ocean and meets certain other requirements, it is under both federal and state control. All federal and state boating, fishing, and development laws must be met.

WATER LEVEL

The United States Department of the Interior, Geological Survey, has had a water depth gage in the Congaree River 1,000 feet downstream from the Gervais Street bridge on the bank (at Mile Post 174.8) from the year 1934 to the present date. They have records of the water depth in the general area from 1891.

On this gage, 0 Gage height is at a level of 132.02 feet M.S.L. (132.02 M.S.L. means that the river bed at this point is 132.02 feet above sea level and the gage is on the bottom of the river). As the water rises in the river bed the actual depth of the water reads from 0 to 19 feet. Nineteen feet is considered to be flood stage at this point on the river.

On this gage the average depth for the last 35 years has been 5.10 feet. In the water year 1974, the river did not read flood stage at all. The maximum was 15½ feet.

In the last published day by day records, this was for the calendar year 1969. It shows that the river was over 19 feet on only 3 days that year, April 19, 20, and 21, 1969, reaching a maximum of 23 feet on April 20. The average depth for that year (1969) was 9½ feet. A later record compiled by different methods shows average level at the gage for the water year, October 1973 to September 1974 to have been 5¼ feet. The maximum was 15½ feet and the minimum was 3 feet.

The high water record level in modern times was in 1964 with a gage level of 28.60 feet on April 10th. The minimum record daily level was on January 19, 1942, at a gage level of 0.94 feet.

There is no average water temperature published for this area of the river because of the mixture of the different rivers at

this point. However, the right (or west) bank, looking downstream is very cold as it comes from the Saluda River powerhouse that draws off the bottom of Lake Murray and is clear and the left bank (Columbia side) is the Broad River which is muddy and is much warmer. It is interesting to note the marbling effect in the mixing of the water downstream for some distance.

There is no accurate estimate on the surface water area of this river.

BANK TOPOGRAPHY

The banks of the river are of a sand-clay mixture that has outstanding adhesive qualities. However, this has been upset at this time by construction work which includes the placing of lines for the waste treatment plants that are under construction on both sides of the river. This should be of a temporary nature.

The actual top of the banks at the river's edge at the Gervais Street bridge averages 125 feet M.S.L. on both sides of the river.

At the Blossom Street bridge, it is about the same. You have on an average of 400 feet back from the river's edge, a 145 feet M.S.L. bank on both sides of the river and higher elevations beyond.

At about the 173 Mile Post you start to lose this natural barrier and the flood plain starts to broaden out as the backup-bank elevation starts to drop to the 130 foot M.S.L. elevation range. This is because you have passed the hills of Columbia and are reaching the plains of the Bluff Road area on the east side, and the Riverland Park subdivision on the west side.

Both natural banks of the river are about equal in this area, 125 to 133 M.S.L.

On the east (or Richland County) side of the river is a man made privately owned dike that is in the 140 - 150 foot M.S.L. range. This dike is approximately 6 miles long.

It starts at about the 173 Mile Post and runs to the mouth of Gills Creek - 167½ Mile Post. This dike is approximately 200 to 300 feet back from the river's edge.

The property on the west side of the Congaree, between Riverland Park and the mouth of Congaree Creek, is also planned for diked development.

BOTTOM

The river bed at the Gervais Street bridge (175 Mile Post) is 115 M.S.L. It drops to 110 M.S.L. at the Blossom Street bridge and down to 105 M.S.L. at the Southern Railroad bridge. Then it levels off to 101 M.S.L. at the 172 Mile Post. Therefore, the water flow in cubic feet per second should be fairly rapid between the Gervais Street bridge and the Railroad bridge. The Railroad bridge is 173½ Mile Post). In that 1½ miles you have a drop in the river of 10 feet M.S.L.

After the river leaves these rocks and rapid flow and levels out at the old Granby Locks at the 173¼ Mile Post, the bottom is fairly flat, and even gains some height at the 171¼ Mile Post. From the 171 Mile Post (proposed Southeastern Beltway) to the confluence of Congaree Creek (Mile Post 168½), it drops only 2 feet M.S.L., so the water in this area is smooth and the bottom is sandy with some gravel banks.

PRESENT RECREATIONAL FACILITIES

At this time there is only one improved recreational area on the Congaree River at Columbia and that is a privately owned launching ramp on the west (Lexington County) side of the river, and it is not maintained year round and is difficult to locate. By most standards it is inadequate.

Historically, people have fished from the banks on both sides of the river. In the majority of instances, these were people of low income who lived in areas of the city within walking distance of the river.

Urban Renewal is altering the population characteristics and density of that area. After careful investigation of the people still fishing from the bank, it was found that 278 of the 341 people interviewed over a 3 year period, were supplementing their diet with their catches. Most ot these people were fishing with a cane pole.

Their productivity, fishing-wise, was very good and most had good yields.

FLOOD PLAIN AND FLOOD WAY
USE FOR RECREATION

Although existing laws regulate subidivion development in flood hazard areas, they do not control other types of flood plain use.

It seems desirable to formulate some type of flood plain zoning plan to control the use of this area to insure public safety in the future.

Present studies show that use of lands in the flood way that would not restrict the flow of water, are generally found to be permissible and in most cases beneficial.

Recreational areas, such as parks, playgrounds, boat launching ramps, greenways and other types of recreational areas that do not require facilities that would obstruct water flow or be heavily damaged by high water, should meet the zoning criteria for the area now and in the future.

FUTURE RECREATIONAL DEVELOPMENT

For 32 years I have owned and operated a boat on this river and its tributaries and observed wildlife, water conditions, the weather, and general recreational use.

I have visited riverfront recreational use developments in other metropolitan areas such as: Philadelphia (the Schuylkill and Delaware Rivers); Baltimore, Md. (Chesapeake Bay and the Susquehanna River); Washington, D. C. (Potomac River); Jacksonville, Fla. (St. Johns River), and others.

Having found and observed poorly planned and improperly placed congested facilities in these areas, I can readily see we have an opportunity in Columbia to plan for the future.

The one thing about the Congaree River in Columbia that makes it one of the most unique places in the United States, is that right in the middle of a major metropolitan area is this undeveloped, beautiful river. This beauty is not really appreciated as it is unseen by most people as they only cross the river over the highway bridges and see the rocks or read about pollution and rapids.

The pollution problem is being alleviated by the construction of a comprehensive waste water treatment program by all municipalities concerned. With the stronger anti-pollutions laws that are now in effect and the greater public awareness of the environment, we expect that pollution will no longer be a problem. This will certainly increase the suitability of the area for recreational use.

With water recreation being one of the major tourist attractions of South Carolina, particularly in the Santee River and Santee Lakes, it would seem advisable that further consideration be given to enhancing this important feature. If proper boat launching facilities were located on the Columbia riverfront

in conjunction with other acceptable recreational areas, and if the boating, fishing (particularly the striped bass, or rock fish as they are sometimes called), along with the trout release program on the Saluda, were properly handled, a whole new industry would be founded from the viewpoint of tourist development.

This study of the water level and topography of the area shows that the water would cover a properly located and constructed boat ramp less than one per cent of the time and would cause no damage to the facilities, or in any way obstruct the flow of water in the flood plain.

The exact location of boat ramps in this area should be the subject of further study.

Since this river comes under both federal and state control, it seems that the interest of both the United States Army Engineer District, Corps of Engineers, Charleston, S. C., the South Carolina Wildlife Department, and other interested parties, should be solicited.

Looking at the placing of such a facility from a practical view, which includes property rights, available land, publicly owned land, the choice narrows down to just a few places on the river.

The intent of this study is not to recommend any exact location, but only to show that it is desirable, possible, and feasible.

There are over 10,000 boats registered in Richland County as of April 1975. In 1974 County taxes of $89,464 were paid on 9,007 boats with an assessed value of $576,470.

The City of Columbia was paid $13,446 in taxes by boat owners.

GERVAIS STREET BRIDGE

It has been said the City of Columbia proposes to build a Bicentennial Park on the east side of the Congaree River. The banks here are very firm and access is excellent. A small boat may be launched here now at low to high water.

Water flow here is usually very good because of the discharge from the South Carolina Electric and Gas Company's Hydroelectric Plant (Project No. 1895 Federal Power Act), that is located on the Other side of the Gervais Street bridge.

BLOSSOM STREET BRIDGE AREA

They City of Columbia owns a tract of land adjacent to the Blossom Street bridge that has excellent access.

Presently on this site there is a waste treatment pumping station under construction. This is located at the 174½ Mile Post.

At this point, the river loses 4 feet in elevation in a very short distance, causing rapid water flow over a very rocky bottom.

CATAWBA STREET

At the end of Catawba Street, the State of South Carolina owns a piece of land that is only partially used by the Bureau of Weights and Measures. This land extends to the river and access is very good.

RAILROAD BRIDGES

Railroad bridges across the river have plenty of space underneath, from the edge of the river back to the bridge, to build an access road.

Between the Seaboard Coast Line and the Southern Railroad bridges is ample space for a boat landing. This area could not be used for commercial development. The water flow and depth is adequate for boat ramp use.

The major factor concerning this location is that some privately owned land would have to be acquired for access.

It is realized that the safety factor from the Railroads' viewpoint would have to be considered, as trains operate in this area daily. However, this is land that could not be put to any other use.

ROSEWOOD DRIVE

At the west end of Rosewood Drive, the Public Service Authority owns 2.8 acres. Water flow and depth are excellent at this location.

At this point on the river, you are below the rocky area and are in smooth water over a sandy bottom.